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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/924,428	08/07/2001	Lei Wu	4718420005000	3614

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EXAMINER

CHEU, CHANGHWA J

ART UNIT	PAPER NUMBER
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1641

10

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/924,428

Applicant(s)

WU ET AL.

Examiner

Jacob Cheu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-114 is/are pending in the application.
- 4a) Of the above claim(s) 35-55, 58-66, 69-91 and 95-114 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-34, 56, 57, 67, 68 and 92-95 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6/9
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of group I, claims 1-34, 56-57, 67-68 and 92-95 in Paper No. 8 is acknowledged.

2. Claims 35-55, 58-66, 69-91 and 96-114 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected subject matter, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8. (See Response to Restriction Requirement on January 7, 2003)

### ***Specification***

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc. Applicant is reminded that legal phraseology should be avoided in the abstract, i.e. line 4, "coding pattern on *said* substrate." Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 5, 10, 22, 26 and 57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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With respect to claim 5, line 4, “other regular or irregular shape” is vague and indefinite. It is unclear how applicants define “regular” and “irregular” shape of the substance.

With respect to claim 5, line 4, “other regular *or* irregular shape” is vague and indefinite. The usage of “or” is inconsistent with the Markaush group claim language. Applicant needs to use proper “and” instead of “or” if Markaush claim is intended.

With respect to claim 10, “wherein the substrate is in an irregular shape,” is vague and indefinite. It is unclear what applicants refer to an “irregular” shape.

With respect to claim 10, “having a single-dimension from about 1 micron to about 50 microns,” is vague and indefinite. It is unclear what “single-dimension” applicants refer to.

With respect to claim 22, “wherein the substance is comprised within the substrate,” is vague and confusing. It is unclear what “comprised” applicants refer to. Does it mean evenly distributed? Applicants are reminded that the wording “comprised” in claim language has special legal meaning. Appropriate correction is needed.

With respect to claim 26, line 2, “a molecule and an aggregate or complex thereof,” is vague and indefinite. It is unclear what applicants refer “a *molecule* and an *aggregate* or a *complex*” in this claim context. Applicants need to particularly point out and distinctly define the claimed molecule, aggregate or complex.

With respect to claim 57, “further comprising instruction(s) for coupling the moiety to the microdevice, “ is vague and indefinite. It is unclear what “instructions” applicants refer as to couple the moiety to the microdevice.

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2 are rejected under 35 U.S.C. 102 (b) as being anticipated by Corless. (WO 9947254)

Corless teaches a microdevice having a substrate (page 2, line 16-19; page 4, line 5-8) and photomask coding pattern on the substrate for identification purposes in combinatorial chemistry. (page 4, second paragraph; page 1, second paragraph) Corless' invention does not need anodization of the surface layer. (whole document) Corless also teaches using different materials for the substrate, i.e. ceramic, glasses, and polymers. (page 9, fourth paragraph)

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

7. Claims 1, 2, 5, 7, 8, 15-17, and 21-22 and 92-94 are rejected under 35 U.S.C. 102 (e) as being anticipated by Drexler. (USP 6318633)

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Drexler teaches a microdevice for laser writing on smart/optical cards. (See Abstract)  
Drexler teaches coating a substrate, i.e. plastic or polycarbonate, as memory data for photorecognition of the optical card. (Col. 6, Best mode for Carrying out the invention; Figure 3)  
Drexler's invention does not need of anodization of the metal surface. (whole document)  
Drexler teaches having a diameter of circular disc shape disc between 0.6 to 3.0 micron (Col. 3, line 7-12; Figure 6) and the substrate having rectangle surface area around 360 square micron. (i.e. 25 micron by 24 micron, See Figure 5, Col. 9, line 15-20) Drexler teaches immobilized secondary substrate on the primary base substrate for laser reflectivity recording. (Col. 7, last paragraph) Drexler also teaches that other sizes or orientation of laser detectable strips could be used. (Col. 6, line 36-45) In addition, Drexler's reference does not comprise a porous surface. (See Col. 7, line 60-67) Drexler teach using various reflective metals such as Bi, Te, Sn, Cu, Al, Pt, Au, Rh, As, Sb, Ge, Se, Ga as laser recording material (Col. 7, 1-3) and covering with a protective non-metal surface layer, i.e. plastic or polycarbonate (Col. 6, line 30-35), where the laser optical recognizable pattern formed various holes within the substrate (Figure 2, 4 and 5)

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
10. Claims 3-4, 6, 9-14, 18-20, 23-34, 56-57, 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drexler in view of Zhou et al. (USP 6355491).

Drexler's reference has been discussed supra and it does not explicitly teach detecting biomolecules, or analytes in a tested sample. Zhou et al. teach a microarray device using different materials for the substrate, including silicon dioxide or silicon nitride, glass, ceramics or plastics (Col. 14, line 61-65), a hydrophilic or hydrophobic molecule coating on the substrate (claims 12 and 26), various shapes of the substrate (Col. 4, line 8-12), flexible thickness of the substrate from 0.1 to 500  $\mu\text{m}$  (Col. 10, line 8-10), photolithographical substrates, sputtering aluminum layer on the silicon layer (Col. 11, line 44-48; Col. 12, line 34-42), or using magnetic material, i.e. ferromagnetic or ferromagnetic materials (Col. 15, line 5-14), nickel metal layer (Col. 12, line 8-9), manipulation of binding partner/binding molecules by external forces, i.e. electric current where the binding partners consisting of a cellular organelle, i.e. receptor, DNA or RNA molecules (claim 14), using magnetic or conductive and/or insulating materials for manipulation (claims 6, 17), or applying external physical forces, such as magnetic field (claims 1, 15 and 25), and using porous or non-porous materials on the surface (Col. 7, line 10-15) Zhou et al also teach using various markers and indicators, i.e. fluorescent dye, for detection purposes. (Col. 2, line 47-52)

→ Although Drexler's reference does not explicitly teach detecting biomolecules, Drexler's teaching is nevertheless purported to purposes of authentication, validation or identification of objects with application of photorecognizable laser detection technique. (See Drexler Col. 2, line 42-45; claim 34) Thus both Drexler and Zhou et al references are directed to solving the similar type of problem, i.e. identification of objects with photorecognition means, such as laser or fluorescent light. Therefore, it would have obvious to one of ordinary skilled in the art at the time the invention was made to have

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provided the microarray device of Zhou et al with the photorecognizable laser barcode as taught by Drexler since the skilled in the relating microarray detection would have been expected to consider those areas of art which have similar problems, in seeking a solution.

With respect to claims 9-10, Zhou et al. disclose the claimed invention except for the certain diameter of the side-width of the cube-like shape or the single-dimension of an irregular shape of the substrates. It would have been an obvious matter of design choice to modify all the possible shape and size of the instant claims, since such a modification would have been involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955)

11. Claim 95 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Drexler in view of Zhou as applied to the claims mentioned above, and further in view of Wang et al.. (IEEE Transactions on Industry Applications (1997) 33: 660-669)

Drexler and Zhou et al. references have been discussed above but fail to apply an external forces that is *not* magnetic force. Wang et al. teaches using various physical forces, such as mechanical, hydrodynamic, ultrasonic, optical and dielectrophoretic for application of cellular isolation, separation and characterization. (See Introduction, first paragraph) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microdevice of Drexler with varieties of options on the external forces *other than* magnetic forces as taught by Zhou et al., such as ultrasonic or hydrodynamic as taught by Wang et al, to manipulate and detect the binding of analytes of interest in a sample.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Cheu whose telephone number is 703-306-4086. The examiner can normally be reached on 8:30-5:00.

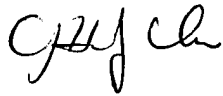


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 703-305-3399. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3399.

Jacob Cheu

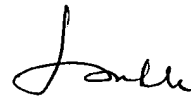


Examiner

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March 17, 2003



LONG V. LE  
SUPERVISORY PATENT EXAMINER  
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02/24/03